

A New Mud-skipper from Papua

(Pisces: Periophthalmidae)

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(Contribution from The Australian Museum, Sydney.)

My late friend, Anthony Musgrave, formerly Curator of Insects and Arachnids at the Australian Museum, was keenly interested in the history and zoology of Papua and Queensland, in both of which places he had spent his early years. Together we visited Thirsty Sound, Queensland, in May 1957, to observe the species of insects, fishes and other animals which had been discovered there by Lieutenant James Cook and his men in May 1770 and whose identity had been in some doubt to this day. Amongst the fishes of Thirsty Sound we found the Mud-skipper, now identifiable as *Euchoristopus kalolo* (Lesson), of which Joseph Banks had written, at the same locality, in his manuscript journal (consulted in the Mitchell Library, Sydney) for 29 May 1770:—

"Here also was a very singular Pheenomenon in a small fish of which there were great abundance. It was about the size of a minnow in England & had two breast finns very strong. We often found him in places quite dry where may be he had been left by the tide. Upon seeing us he immediately fled from us leaping as nimbly as a frog by the help of his breast finns, nor did he seem to prefer water to land for if seen in the water he often leapt out & proceeded upon dry land & where the water was filld with small stones standing above its surface would leap from stone to stone rather than go into the water. In this manner I observed several pass over puddles of water & proceed on the other side leaping as before."

Similar accounts have been published in Hawkesworth's 1773 account and other editions of Cook's Voyage.

Even before this, the botanist J. G. Koelreuter appears to have mentioned a mud-skipper in a Russian paper, published in 1761, which is not available to me. The species was named *Gobius koelreuteri* after him by Pallas in his *Spicilegia Zoologica* (i, 8, 1770, p. 8, pl. ii, figs. 1-3) which I have consulted at the National Library, Canberra. A type-locality for the originally unlocalised *koelreuteri* does not appear to have been selected. Cuvier & Valenciennes (*Hist. Nat. Poiss.* xii, 1837, p. 181) gave the Seychelles as the first definite locality for that species so the Seychelle Islands are hereby designated the type-locality. Two forms occur there, according to Smith (*Id. Bull. Rhodes Univ.* xiii, 1959, p. 219): *africanus* and *sobrius* Eggert. Many mud-skipper have been called *Periophthalmus koelreuteri* (Pallas) but Eggert and other ichthyologists have shown that a number of species and subspecies have been confused under that name.

When examining the Australian Museum's collection of Periophthalmidae, I came across some Papuan specimens which require a name so I dedicate this new species to my late colleague.

Family PERIOPHTHALMIDAE.

Genus PERIOPHTHALMUS Bloch & Schneider, 1801.

PERIOPHTHALMUS MUSGRAVEI, sp. nov.

D. xi-xv/i, 11-12; A. 10-12; P. 13-14; V. i, 5; C. 22-27 (including procurrent rays). Scales *circa* 76-81 to root of tail. Tr., from first dorsal origin, *circa* 30; from second dorsal origin, *circa* 21 to 23. Predorsal scales about 35 to 38.

Head (28 mm.) 4.1; depth of body (20) 5.8 in total length (116). Head at least as broad as high. Eye (7) 4, longest (third) dorsal spine (21) 1.3, median dorsal rays (12) 2.3, and median anal rays (8) 3.5 in head.

Head scaly except for eyes, frons, mouth and chin. Eyes large,

contiguous, with lower lids. Snout bluff, broad, rounded. Anterior nostril in pointed protruberance over upper lip; posterior pore-like and near eye. Upper lip expanded laterally into a fleshy fold below preorbital; a similar shorter fold below side of lower lip. Mouth extending below anterior part of eye. Teeth conic, erect, peg-like, of unequal size, some caninoid in front, juxtaposed, and in a single row in each jaw. No teeth on palate. Gill-opening small (8 mm.), before pectoral base, separated from the opposite one by a broad isthmus. Eight short gill-rakers on lower part of first branchial arch.

General facies of "*Periophthalmus barbarus*" as figured by Herre (Gobies Philip. & China Sea, 1827, p. 316, pl. 24, fig. 3) and the *P. koelreuteri* var. of Eggert (Zeitschr. Wiss. Zool. 133, 1928, p. 403, pl. 9, fig. 4).

Body elongate, cylindrical; myomeres indistinct, covered with small cycloid scales. Genital papilla arched or, in the ripe female, flap-like with a median nick.

First and second dorsal fins separate. First dorsal fin higher than long, convex, fan-like, its last spine connected to back by a concave membrane, and its first spine shorter than the three or four following ones. First ray of second dorsal fin either higher, equal to or less than half the depth of the body below it, and higher than anal fin. Pectoral rays shorter than head, the fin rounded, barely or not reaching level of vent, Ventral fins not totally united but joined by a concave-edged frenum for about half the length of the inner rays; basal membrane reduced to a fatty fold. Caudal rather pointed with small, slender, reduced procurent rays above and thick finger-like lower rays increasing in length posteriorly.

Colour, in alcohol, dark, fairly uniform greyish-brown with some darker patches. No conspicuous light streaks or spots on head or body. Eyes blue, yellowish below. Ventral surface practically all pale yellowish except for dark purplish-brown around lips. First dorsal fin dark brown, without stripes, but with some yellow spots, a broad black inframarginal band, and a cream distal margin. Second dorsal fin brown with whitish spots, the upper row of which tend to form a band below a broad black inframarginal band, above which there is another band of white spots and a darker area along the margins of the split rays. Pectoral base similar to body-colour, with few light spots in axil; pectoral rays spotted brown, membranes whitish. Ventrals, anal and lower portions of caudal plain yellowish. Most of caudal rays brown and membranes brown-spotted.

Described from the holotype, a specimen 116 mm. long, and four paratypes, 95 to 125 mm. in length. Australian Museum registered no. IA. 5868.

A sketch illustrating my new species appeared in the *Education Gazette* (Sydney) liv, 4, April 1960, p. 143.

Loc.— Misima Island, south-eastern Division of Papua; presented by Mr. H. Champion in 1933.

Distinguished from other species of the genus by its convex first dorsal fin, with numerous spines, separate from soft dorsal fin; inner rays of ventral fins joined by concave membrane; poorly developed basal membrane on ventrals; its formulac and coloration, and by its mouth extending below anterior portion of eye. In true *P. koelreuteri* the ventral fins are figured by Pallas as separated. In Koumans' key (Fish. Indo-Austr. Archip. x, 1953, p. 200) *P. musgravei* comes nearest *P. harmsi* and *koelreuteri* but differs from the former in having larger and fewer scales and in lacking stripes on first dorsal fin; the first dorsal spine of *musgravei* is whitish and the front membranes uniformly dusky. Koumans described *koelreuteri* as having "Inner rays of ventral fin only united at the base by a narrow membrane, which is deeply emarginate . . . Opercle with light dots on lower half."